

Prevalence, Comorbidity, and Prognosis of Mental Health Among US Veterans

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Mental disorders are common, costly, and debilitating.¹ In 2013, nearly 1 in 5 adults aged 18 years or older (18.5%) had a mental illness; nearly half of all Americans will experience a mental illness in their lifetime.² In 2006, treating the 31.6 million adult patients with mental illnesses cost the United States \$48.6 billion.³ Integrating mental health in primary care settings improves screening and detection of mental illnesses,^{4–8} and collaborative care models have shown improvements in both proximal and distal mental health outcomes among patients with depression and anxiety.^{6,9,10}

Despite calls for the integration of mental health services into primary care, most care in the United States remains fragmented. By contrast, the Veterans Health Administration (VHA) has a well-developed system of integrated mental health assessment, treatment, and management in primary care settings. In 2007, the VHA instituted the Primary Care–Mental Health Integration (PCMHI) program.¹¹ This program, which colocated mental health services within primary care, has been shown to improve the screening and detection of mental illness,⁴ as well as the provision of preventive medical care among patients with psychiatric disorders.¹² In 2010, the VHA implemented a patient-centered medical home model in primary care sites called the Patient Aligned Care Teams (PACT) to further increase care coordination, continuity, and veteran-centered care among more than 5 million veterans with and without mental illnesses. Because the comorbidity of physical and mental illnesses can lead to worse outcomes, an important aspect of PACT implementation is to determine the burden of mental illnesses among patients with common medical conditions as well as the effect of mental illness on the outcomes of patients in primary care.

The current study had 3 goals: (1) to describe the 12-month prevalence of 5 common

Objectives. We evaluated the association of mental illnesses with clinical outcomes among US veterans and evaluated the effects of Primary Care–Mental Health Integration (PCMHI).

Methods. A total of 4461 208 veterans were seen in the Veterans Health Administration's patient-centered medical homes called Patient Aligned Care Teams (PACT) in 2010 and 2011, of whom 1 147 022 had at least 1 diagnosis of depression, posttraumatic stress disorder (PTSD), substance use disorder (SUD), anxiety disorder, or serious mental illness (SMI; i.e., schizophrenia or bipolar disorder). We estimated 1-year risk of emergency department (ED) visits, hospitalizations, and mortality by mental illness category and by PCMHI involvement.

Results. A quarter of all PACT patients reported 1 or more mental illnesses. Depression, SMI, and SUD were associated with increased risk of hospitalization or death. PTSD was associated with lower odds of ED visits and mortality. Having 1 or more contact with PCMHI was associated with better outcomes.

Conclusions. Mental illnesses are associated with poor outcomes, but integrating mental health treatment in primary care may be associated with lower risk of those outcomes. (*Am J Public Health.* 2015;105:2564–2569. doi:10.2105/AJPH.2015.302836)

mental disorders in VHA primary care—depression, posttraumatic stress disorder (PTSD), substance use disorder (SUD), anxiety, and serious mental illness (SMI); (2) to determine the association between these mental disorders and patients' 1-year risk for emergency department (ED) visits, hospitalizations, and mortality risk; and (3) to understand whether PCMHI involvement is associated with decreased risk of ED visits, hospitalizations, and mortality among veterans with mental disorders.

METHODS

Methods used to define the primary care cohort have been described in detail elsewhere.¹³ Briefly, we used the Primary Care Management Module contained within the VHA's Corporate Data Warehouse to identify all patients who were enrolled and assigned to a primary care provider within the VHA prior to PACT implementation. We used the year following PACT implementation (April

2010–March 2011) to define the cohort and to obtain patients' demographics (age, gender, race/ethnicity, and marital status), service connection, clinical conditions, and *International Classification of Diseases, Ninth Revision (ICD-9)*¹⁴ codes. We abstracted inpatient ICD-9 diagnosis codes from the National Patient Care Database Medical SAS Patient Treatment File.¹⁵ VHA eligibility is defined by enrollment in priority groups based on service-connected conditions, length of military service, disability, and income. Veterans with a service-connected disability of 50% or higher are given the highest priority for receiving care within the VHA. We excluded patients who died during the cohort establishment period. In this way, we established a cohort of patients who were connected to VHA primary care immediately following PACT.

We included all primary care patients across VHA facilities regardless of the status of PACT implementation at the patient's care site. We identified a total of 4 461 208 veterans. Of these, we identified the subset of 1 147 022

who had at least 1 of the following 5 mental illnesses: depression, PTSD, SUD, anxiety, and SMI (i.e., bipolar disorder and schizophrenia). *ICD-9* codes used to define mental illness conditions are provided in Appendix A (available as a supplement to the online version of this article at <http://www.ajph.org>). We defined all conditions except SUD as being present if there were 2 or more outpatient visits or 1 or more inpatient hospitalizations with the relevant diagnosis codes. For SUD, we required only 1 or more hospitalizations or outpatient visits. We also used *ICD-9* codes to define common medical conditions, which included diabetes, hypertension, ischemic heart disease, chronic heart failure, chronic obstructive pulmonary disease, dementia, cancer, and pain. We used the Deyo adaptation of the Charlson score to measure medical illness comorbidity.¹⁶

We examined outpatient and inpatient health services utilization and mortality between April 2011 and April 2012; that is, a year following the PACT rollout. We used stop codes from the Corporate Data Warehouse to define visits to primary care clinics, specialty medical care clinics, specialty mental health care clinics, PCMHI, ED visits, and inpatient hospital stays (Appendix B, available as a supplement to the online version of this article at <http://www.ajph.org>). We identified deaths using the VHA vital status file, which combines mortality data from 4 different US Department of Veterans Affairs (VA) sources. It has been validated against the National Death Index, with a sensitivity of 98.3% and specificity of 99.8% compared with the National Death Index, which is the gold standard of mortality data.¹⁷

We conducted descriptive analyses to examine the prevalence and co-occurrence of the mental illnesses. We used logistic regression to determine the association of mental health conditions and PCMHI with ED visits (any vs none), hospitalization (any vs none), and mortality in the 12 months after inclusion in the cohort. Covariates were age, comorbidity (Deyo score), gender, and race/ethnicity, as well as the number of visits in PCMHI, number of primary care visits, and number of visits in specialty mental health care in the year of cohort identification. We clustered analyses by facility to control for variation in PACT implementation. Among those with mental illnesses,

we specified interactions between each mental illness and the number of visits in PCMHI, since we hypothesized that patients receiving mental health interventions in primary care would have better outcomes than patients with mental health conditions not seen in PCMHI. We then combined the terms for each mental illness alone (e.g., PTSD) and the interaction with PCMHI (e.g., PTSD \times PCMHI) to examine the risk of admission, mortality, and emergency visit of each mental health group with and without PCMHI. We accomplished this using the Stata command LINCOM ("linear combination of parameters"; StataCorp LP, College Station, TX). We used the χ^2 statistic to examine the association between whether a PCMHI visit occurred and PTSD status by age category. We conducted all analyses using Stata 13.

RESULTS

There were 4 461 208 veterans who were seen in PACT in the first year following the PACT rollout. Approximately 1.15 million of these veterans were diagnosed with at least 1 of the 5 mental illnesses (Table 1). Depression was the most prevalent condition (13.5%), followed by PTSD (9.3%), SUD (8.3%), anxiety disorder (4.8%), and SMI (3.7%). As shown in Figure 1, there was significant co-occurrence among psychiatric diagnoses. Notably, among depressed patients, 33.2% had PTSD, 19.4% had an anxiety disorder, and 23.2% had an SUD. SUD co-occurred for more than 20% of those with all of the other mental disorders.

A high proportion of patients with common medical diagnoses had at least 1 comorbid mental illness. In particular, mental illnesses were prevalent among veterans with pain (43%), hypertension (33%), and diabetes (32%). Across all conditions except hepatitis C, depression was the most prevalent mental illness, ranging from 11% among patients with ischemic heart disease and cancer to over 21% among patients with dementia. The highest prevalence of mental illness was found among patients with hepatitis C (71%).

In unadjusted analyses among patients with mental illness, the highest users of inpatient services were patients with an SMI, with 21.6% of SMI patients requiring a hospitalization and 40.5% requiring an ED visit during the 1-year follow-up (Table 1). Compared with

patients with other mental illnesses, a greater percentage of SMI patients (3.2%) also died within 1 year. By contrast, PTSD patients had the lowest proportion of patients who were hospitalized (13.7%), had ED visits (32.0%), or died during the 1-year follow-up (1.9%). Among the 12.9% of mental health patients with any visits to PCMHI, the mean number was 2.94 (SD=3.58) visits. Because the PCMHI program predated PACT, we evaluated differences between mentally ill patients who were seen within the PCMHI program and those that were not (Table A, available as a supplement to the online version of this article at <http://www.ajph.org>). We found that patients with mental illness seen within PCMHI had considerably more visits to primary and specialty care, but slightly fewer mental health specialty care visits, than those patients who were not seen in PCMHI.

Results from multivariate logistic regression are provided in Table 2. After we controlled for sociodemographic variables and comorbidity, patients with all mental illnesses except PTSD had an independent risk of ED visits within 1 year compared with patients without PTSD (adjusted odds ratio [AOR] range = 1.18–1.44; all P s < .001). SUD was associated with the highest risk; compared with patients without SUD, patients with SUD had 44% increased odds of ED visits within 1 year (AOR = 1.44; 95% confidence interval [CI] = 1.41, 1.46). In multivariate models examining the risk of hospitalization, depression, SUD, anxiety, and SMI were associated with higher odds of hospitalization. SUD and SMI were especially detrimental, since their presence was associated with a nearly twofold increase in being hospitalized within 1 year (for SUD, AOR = 1.98; 95% CI = 1.95, 2.02; for SMI, AOR = 1.83; 95% CI = 1.79, 1.87). On the other hand, PTSD was associated with a 5% reduced risk of subsequent hospitalization (AOR = 0.95; 95% CI = 0.94, 0.97).

In adjusted models examining patients' 1-year mortality risk (Table 2), we found that having an SUD increased the odds of 1-year mortality by 77% (AOR = 1.77; 95% CI = 1.73, 1.82). The risk of mortality was also high if veterans had an SMI (AOR = 1.37; 95% CI = 1.32, 1.42) or depression (AOR = 1.14;

TABLE 1—Demographic Characteristics and Health Care Utilization Among US Veterans With Mental Illness Seen Within Veterans Administration Primary Care Settings, 2010–2011

Variable	Any Mental Illness	Depression	PTSD	SUD	Anxiety	SMI
Total, no. (%)	1 147 022 (25.7)	603 457 (13.5)	415 706 (9.3)	370 840 (8.3)	213 209 (4.8)	163 859 (3.7)
Age, mean \pm SD	57.3 \pm 13.8	57.2 \pm 13.8	55.9 \pm 14.2	55.2 \pm 12.2	56.2 \pm 15.2	56.2 \pm 12.6
Female, %	8.5	11.2	7.9	4.3	11.9	11.6
Race, %						
Black	19.7	18.1	19.4	27.0	12.2	23.5
White	72.3	74.1	71.6	65.2	80.2	69.9
Hispanic	1.0	1.0	1.1	0.8	0.8	1.7
Other	2.9	2.8	3.6	2.5	2.6	2.9
Unknown or missing	4.2	3.9	4.4	4.4	4.3	1.9
Married, %	47.9	49.5	58.4	33.0	48.5	33.7
Service-connected disability > 50%, %	44.3	43.5	74.3	29.5	39.0	45.4
Deyo scores, %						
< 3	84.4	82.6	85.1	87.3	85.9	85.5
3–4	10.7	11.8	10.8	8.4	9.8	9.9
\geq 5	4.8	5.6	4.1	4.3	4.4	4.6
Primary care visits in previous year, mean \pm SD	4.3 \pm 3.9	4.8 \pm 4.3	4.5 \pm 4.1	4.1 \pm 3.8	4.9 \pm 4.4	4.6 \pm 4.4
Specialty care visits, mean \pm SD	2.6 \pm 1.5	3.0 \pm 5.5	2.7 \pm 5.0	2.4 \pm 4.8	2.9 \pm 5.4	2.6 \pm 5.4
Mental health specialty care visits, mean \pm SD	8.5 \pm 0.1	9.6 \pm 18.3	11.1 \pm 18.4	12.3 \pm 24.8	9.5 \pm 18.2	16.6 \pm 27.7
PCMHI visits, mean \pm SD	0.4 \pm 0.0	0.5 \pm 1.9	0.4 \pm 1.8	0.3 \pm 1.4	0.6 \pm 2.0	0.3 \pm 1.5
ED visits, no. (%)	374 516 (32.6)	210 192 (34.8)	132 864 (32.0)	138 288 (37.3)	74 438 (34.9)	66 345 (40.5)
Hospitalizations, no. (%)	169 314 (14.5)	96 744 (16.0)	57 071 (13.7)	71 378 (19.3)	32 442 (15.2)	35 423 (21.6)
Deaths, no. (%)	32 958 (2.9)	17 804 (2.9)	7 821 (1.9)	11 372 (3.1)	5 854 (2.7)	5 314 (3.2)

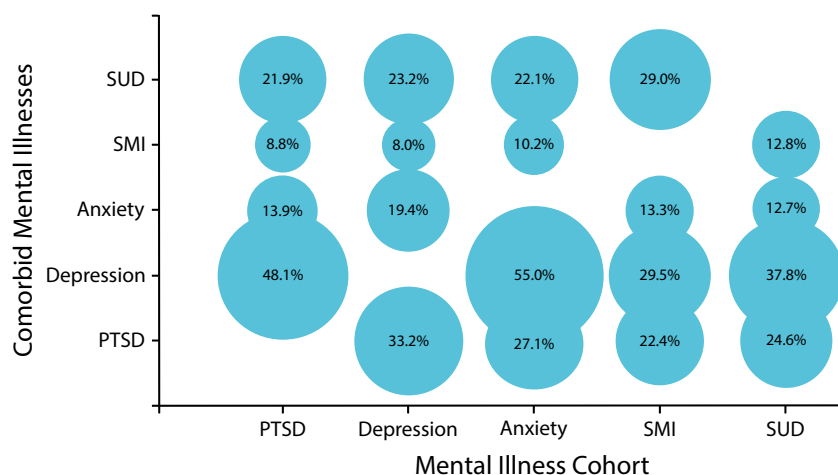
Note. ED = emergency department; PCMHI = primary care-mental health integration; PTSD = posttraumatic stress disorder; SMI = serious mental illness; SUD = substance use disorder.

95% CI = 1.11, 1.17). PTSD was associated with reduced the risk of mortality at 1 year (AOR = 0.76; 95% CI = 0.74, 0.79).

To understand the effect of PCMHI contact on clinical outcomes, we combined the effects captured by the PCMHI main effect term

with the PCMHI \times mental illness interaction term using the Stata command LINCOM (Table 3). Patients with PTSD evidenced lower mortality and hospitalization than those without PTSD, whether or not they had a PCMHI visit. Furthermore, patients with PTSD who were seen in PCMHI had lower risk of ED visits than patients without PTSD. Patients with all other mental illnesses had a lower risk of having an ED visit, hospitalization, or death compared with patients with that mental illness who were not seen in PCMHI. For example, patients with SUD had a higher risk of mortality compared with those who did not have depression, but that risk of mortality was lower if they had a PCMHI visit (OR = 1.67; 95% CI = 1.53, 1.82) than if they did not (OR = 1.79; 95% CI = 1.74, 1.84).

We undertook posthoc analyses to examine why PTSD was independently associated with a lower mortality risk. First, we hypothesized that PTSD patients could have more contact



Note. PTSD = posttraumatic stress disorder; SMI = serious mental illness; SUD = substance use disorder.

FIGURE 1—Comorbidity of 5 mental illnesses among US veterans: 2010–2011.

TABLE 2—Association of Baseline Characteristics and 1-Year Risk of Emergency Department Visit, Hospitalization, or Death Among US Veterans: 2010–2012

Variable	Emergency Department Visits, AOR (95% CI)	Hospitalizations, AOR (95% CI)	Mortality, AOR (95% CI)
Depression	1.19 (1.17, 1.22)	1.32 (1.30, 1.34)	1.14 (1.11, 1.17)
PTSD	0.99 (0.97, 1.03)	0.95 (0.94, 0.97)	0.76 (0.74, 0.79)
SUD	1.44 (1.41, 1.46)	1.98 (1.95, 2.02)	1.77 (1.73, 1.82)
Anxiety	1.18 (1.15, 1.21)	1.14 (1.12, 1.16)	1.03 (0.99, 1.06)
SMI	1.40 (1.37, 1.44)	1.83 (1.79, 1.87)	1.37 (1.32, 1.42)
Any PCMHI visits	1.31 (1.23, 1.40)	1.16 (1.11, 1.22)	1.13 (1.07, 1.20)
Any medical specialty care visits	1.66 (1.60, 1.72)	1.79 (1.75, 1.84)	1.03 (1.01, 1.04)
Any mental health specialty care visits	1.25 (1.22, 1.29)	1.16 (1.14, 1.19)	1.11 (1.08, 1.15)
No. of primary care visits	1.08 (1.07, 1.09)	1.06 (1.06, 1.07)	0.99 (0.99, 0.99)
No. of medical specialty care visits	1.04 (1.04, 1.05)	1.04 (1.04, 1.04)	1.03 (1.03, 1.04)
Interaction between PCMHI and depression	0.87 (0.84, 0.91)	0.86 (0.83, 0.89)	0.88 (0.82, 0.94)
Interaction between PCMHI and PTSD	0.84 (0.80, 0.88)	0.97 (0.94, 1.01)	0.93 (0.86, 1.02)
Interaction between PCMHI and SUD	0.92 (0.88, 0.95)	0.95 (0.92, 0.99)	0.94 (0.86, 1.02)
Interaction between PCMHI and anxiety	0.91 (0.87, 0.95)	0.93 (0.89, 0.97)	0.86 (0.79, 0.94)
Interaction between PCMHI and SMI	0.88 (0.80, 0.95)	0.95 (0.89, 1.01)	1.02 (0.91, 1.15)

Note. AOR = adjusted odds ratio; CI = confidence interval; PCMHI = primary care-mental health integration; PTSD = posttraumatic stress disorder; SMI = serious mental illness; SUD = substance use disorder. All analyses controlled for age, gender, race, marital status, service connected disability, and Deyo-Charlson Index for comorbidity. The sample size was $n = 4\,461\,179$.

with the medical care system, which could potentially lead to better health outcomes than for patients without PTSD. To test this, we examined the mean number of ambulatory care visits among patients with and without a diagnosis of PTSD in the different age groups. We divided visits into primary care, specialty medical care, mental health specialty care, and PCMHI. As can be seen in Figure A (available as a supplement to the online version of this article at <http://www.ajph.org>), patients with PTSD had more frequent visits to primary care, PCMHI, specialty mental health care, and

specialty medical care across all age groups. Patients with PTSD were more likely to have a PCMHI visit across all age groups (all P s < .001 by χ^2).

Second, we hypothesized that older patients with more comorbid conditions would be particularly likely to have improved survival if a diagnosis of PTSD brought them into more frequent contact with medical care. To test this hypothesis, we divided age into deciles and conducted multivariate logistic regression, controlling for sociodemographic variables, Deyo scores, primary care visits,

PCMHI visits, specialty care, and comorbid medical illnesses, including ischemic heart disease, congestive heart failure, chronic obstructive pulmonary disease, diabetes, hypertension, and cancer. The adjusted odds ratios are shown in Figure B (available as a supplement to the online version of this article at <http://www.ajph.org>). The risk for mortality was higher among younger PTSD patients; however, among patients aged 60 years and older, adjusted mortality risk for those with PTSD was lower than for those without PTSD.

TABLE 3—Association of Baseline Characteristics and 1-Year Risk of Emergency Department Visit, Hospitalization, or Death Among US Veterans, by Involvement in Primary Care–Mental Health Integration (PCMHI): 2010–2012

Mental Condition	ED Visits, AOR (95% CI)		Hospitalizations, AOR (95% CI)		Mortality, AOR (95% CI)	
	PCMHI (Yes)	PCMHI (No)	PCMHI (Yes)	PCMHI (No)	PCMHI (Yes)	PCMHI (No)
Depression	1.05 (1.00, 1.09)	1.21 (1.18, 1.23)	1.14 (1.10, 1.19)	1.33 (1.31, 1.36)	1.01 (0.94, 1.08)	1.16 (1.12, 1.19)
PTSD	0.86 (0.82, 0.90)	1.01 (0.98, 1.04)	0.94 (0.91, 0.98)	0.97 (0.95, 0.99)	0.74 (0.67, 0.81)	0.78 (0.75, 0.81)
SUD	1.32 (1.26, 1.38)	1.44 (1.41, 1.47)	1.94 (1.86, 2.02)	2.01 (1.97, 2.06)	1.67 (1.53, 1.82)	1.79 (1.74, 1.84)
Anxiety	1.07 (1.03, 1.11)	1.20 (1.17, 1.23)	1.06 (1.02, 1.10)	1.15 (1.13, 1.17)	0.91 (0.83, 1.00)	1.05 (1.01, 1.09)
SMI	1.26 (1.15, 1.39)	1.39 (1.35, 1.43)	1.78 (1.66, 1.92)	1.83 (1.79, 1.87)	1.37 (1.20, 1.56)	1.39 (1.33, 1.45)

Note. AOR = adjusted odds ratio; CI = confidence interval; ED = emergency department; PTSD = posttraumatic stress disorder; SMI = serious mental illness; SUD = substance use disorder. All analyses controlled for age, gender, race, marital status, service connected disability, and Deyo-Charlson Index for comorbidity. The sample size was $n = 4\,461\,179$.

DISCUSSION

We found a high prevalence of mental illnesses among patients who receive VHA primary care services. The prevalence of each of the 5 mental health conditions was higher than known estimates of the general population from other epidemiological studies, such as the National Comorbidity Study–Revised and Epidemiological Catchment Area study.^{2,18} Small studies have estimated that approximately 26% of primary care patients in the United States have at least 1 mental illness.¹⁹ A study conducted in the 1990s found that among 3000 primary care patients, 28% had a diagnosis of a mental health condition.²⁰ Although dated, these numbers are consistent with our results of 25.7% of primary care patients with a mental health condition and underscore the high burden of mental illness seen in VHA primary care. We also found that the various mental illnesses frequently occurred together, and also co-occurred with common medical conditions. Patients seen within PCMH had more primary care, specialty care, and specialty mental health care visits than those not seen in PCMH.

We found that diagnoses of depression, SUD, or SMI were associated with worse prognosis at 1 year for health care utilization and the mortality outcomes. Unlike the other mental illnesses, PTSD appeared to confer a lower risk for mortality at 1 year. In post hoc analyses, we examined outpatient care utilization among PTSD patients. Across all age groups, PTSD patients had more frequent visits to primary care, specialty medical care, specialty mental health care, and PCMH clinics. Although in conflict with large, longitudinal studies that have shown PTSD to predict higher mortality risk,^{21–23} these results are consistent with data using VHA administrative data.^{24,25} Similar to our results, their initial finding was that patients who had PTSD and reported more depressive symptoms had lower risk of mortality at 2 years. In their post hoc analyses, they found that these patients had a higher prevalence of conditions that are considered service connected. In our data, we found much higher rates of service-connected disability and higher likelihood of being married, which suggest that social and economic factors are at least as important as VHA care. We found that the

association between PTSD and lower mortality was true only for the older age groups. This finding suggests that for younger patients, who have lower mortality rates overall, having PTSD could increase their risk of death initially, whereas for older patients with multiple chronic conditions, greater contact with the medical system may result in lower mortality.

We also found that having contact with PCMH was associated with better outcomes among patients with depression, SUD, SMI, and anxiety, compared with patients who did not have those conditions. This suggests that although patients with mental illnesses are at risk for poor outcomes, this risk may be mitigated by at least 1 PCMH contact. These findings should be further explored by examining the relative effects of contact with the PCMH program and by including confounders such as severity of mental illness.

A key strength of our study is its sample size. We included all veterans who were seen in VA primary care. These broad criteria resulted in over 1 million veterans with a mental illness diagnosis being included in our study. Because we relied on administrative data, we were not subject to biases inherent in self-report studies.

The current study also has some important limitations. First, we were unable to determine duration or severity of the 5 mental illnesses. Second, we did not have necessary self-report data on symptom severity for any of the mental disorders. Although it is recommended that veterans get screened with the PTSD Checklist, there is significant missing data in existing data sets. Third, our analysis weighed all comorbidities equally even though it is likely that the effect of comorbidity may vary across different combinations and severity of diseases. Fourth, we did not have access to utilization at non-VA facilities, such as ED visits and hospitalizations. Finally, although not subject to the biases of self-report, our data are subject to biases introduced by misdiagnosis or underdiagnosis of mental disorders. ICD-9 codes are likely to have poor sensitivity for mental illness conditions, particularly depression and SUD.²⁶

As more health systems adopt a patient-centered medical home model of primary care, many models for incorporating mental health care in primary care have been suggested, with promising initial results.^{27–29} However, the

reality is that care remains fragmented. Too few efforts are under way to systematically integrate mental and physical health in primary care settings, and those that exist largely focus on depression to the exclusion of other common mental illnesses such as anxiety, SUD, PTSD, and SMI. Despite the fact that mental illnesses are associated with higher health care utilization,³⁰ worse prognosis,³¹ complicated management of chronic medical conditions,³² and reduced access to care,³³ a recent report of 20 patient-centered medical home models in the United States purportedly evaluated the impact of the medical home on cost and utilization, population health and prevention, access to care, and patient or clinical satisfaction, but made no mention of mental health or behavioral outcomes.³⁴ Therefore, there is a pressing need to develop an evidence base of the effects of patient-centered medical homes on primary care patients who have mental illnesses.

As models for primary care delivery continue to evolve, the challenges surrounding physical and mental illness comorbidity are critical. Our results emphasize that the burden of mental illness among VHA primary care patients is very high, and this burden generally results in worse outcomes. Coordinating care of mental illness within primary care settings should remain a priority. ■

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Contributors

R. B. Trivedi oversaw all study activities. E. P. Post, A. Pomerantz, A. J. Saxon, and C. Maynard provided conceptual oversight and guided the methodology. H. Sun performed statistical analyses. J. D. Piette and B. Arnow

provided methodological oversight. I. Curtis coordinated all study-related activities. S. D. Fihn and K. Nelson helped design the study and refine the research question. All authors contributed to the drafting of the article.

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Human Participant Protection

No protocol approval was necessary because data were obtained from secondary sources.

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